WHAT IS CLAIMED IS:

1. A system for calibrating a spatial light modulator array comprising:

an illumination system;

a spatial light modulator array that modulates light from the illumination system;

a projection optical system that images the spatial light modulator array onto an image plane;

a shearing interferometer that creates an interference pattern in the image plane; and

a controller modulating elements of the spatial light modulator array.

2. The system of claim **1**, wherein the shearing interferometer includes any of a diffraction grating, a prism, and a folding mirror for generating shear.

3. The system of claim **1**, wherein the shearing interferometer is a lateral shearing interferometer.

4. The system of claim **1**, wherein the shearing interferometer is a stretching shearing interferometer.

5. The system of claim **1**, wherein the shearing interferometer is a rotational shearing interferometer.

6. The system of claim **1**, wherein the projection optics resolves each element of the spatial light modulator array in the image plane.

7. The system of claim **1**, wherein the controller modulates alternate columns of elements of the spatial light modulator array.

8. The system of claim **1**, wherein the shearing interferometer includes a diffraction grating with a pitch corresponding to a shear of the light by an integer number of elements of the spatial light modulator array.

9. The system of claim **1**, wherein the shearing interferometer includes a diffraction grating with a pitch corresponding to a shear of the light by a fractional number of elements of the spatial light modulator array.

10. The system of claim **1**, wherein the controller controls any of tilting, pistoning, and deformation of the elements.

11. The system of claim **1**, further including a CCD detector in the image plane for detecting the interferogram.

12. The system of claim **11**, wherein the CCD detector includes a plurality of detector cells corresponding to each element of the spatial light modulator array.

13. The system of claim **1**, wherein the spatial light modulator array is a reflective spatial light modulator array.

14. The system of claim **1**, wherein the spatial light modulator array is a pistoning-type spatial light modulator array.

15. The system of claim **1**, wherein the spatial light modulator array is a tilting micromirror-type spatial light modulator array.

16. The system of claim **1**, wherein the spatial light modulator array is a transmissive spatial light modulator array.

17. A method for calibrating a spatial light modulator array comprising:

generating light from an illumination system;

modulating the light using a spatial light modulator array;

passing the light through a projection optical system so as to image the spatial light modulator array onto an image plane;

shearing the light so as to create an interference pattern in the image plane;

detecting the light in the image plane so as to measure interference fringes; and

modulating the spatial light modulator array while repeating the detecting step.

18. The method of claim **17**, wherein the shearing step includes shearing the light using any of a diffraction grating, a prism and a folding mirror.

19. The method of claim **17**, wherein the shearing step includes shearing the light using a stretching shearing interferometer.

20. The method of claim **17**, wherein the shearing step includes shearing the light using a rotational shearing interferometer.

21. The method of claim **17**, applying the projection optics to resolve each element of the spatial light modulator array in the image plane.

22. The system of claim **17**, wherein the shearing step includes shearing the light using a diffraction grating with a pitch corresponding to a shear of the light by an integer number of spatial light modulator array elements.

23. The system of claim **17**, wherein the shearing step includes shearing the light using a diffraction grating with a pitch corresponding to a shear of the light by an fractional number of spatial light modulator array elements.